

image information formed by the image data ID, can be determined and also its shape, i.e. the location areas of the one or more primary image objects I1 in the image IT.

[0035] The data obtained from the calculation portion 26 of the focussed area can be sent to the filtering coefficient calculation module 22. On the basis of the data of the focussed focus area, i.e. in other words of the portrait area, the final area, which is used in the calculation of the filtering coefficients, can be selected/calculated. This area can even be pixel-accurate, thus delimiting the primary image object I1 very precisely. On the other hand, the portrait area used can be entered, for instance manually, for example, by lassoing from a touch screen, if the device has one. The module 22 can calculate the filtering coefficients, by using which the secondary image objects, i.e. the areas I2 are blurred. The filtering coefficients calculated by the module 22 are provided to the filtering module 17, which performs the blurring of the irrelevant image areas I2. This will be returned to in greater detail in the description of the method given next.

[0036] FIG. 3 shows a flow chart of a schematic example in principle of the method according to the invention in digital imaging for blurring inessential image areas I2. In the method description, reference is made to an example of an imaging situation, which is shown in FIG. 4. In it, the image target IT consists of two people, a man with a briefcase and a woman reading a newspaper, as well as a short length of rolled-steel joist. In this case, the people are the primary image objects I1 while the length of joist is the secondary image object I2, which it is wished to blur. In general, the background area of the entire image area can, in connection with the invention, be understood as being such a secondary image object I2.

[0037] When imaging is started with the device 10, the imaging program is activated, as stage 300, which in this case applied automatic focussing. In stage 301, the set of lenses 15 can be adjusted using the mechanism 14 to the initial focussing position.

[0038] As stage 302, image data ID is formed using the sensor 12, i.e. viewfinder shots are formed, for example, for the viewfinder VF. In practice, the formation of the image data ID is performed continuously, the frequency being, for example, 15-30 frames per second. In stages 303 and 304, focussing operations that are, as such, known, can be performed. As such, all the blocks 301-304, which are inside the block with a broken line around it, can be understood to be focussing sub-stages.

[0039] The actual focussing stages 303 and 304 can be taken care of automatically by the focussing module 28, or allowance can also be made in them for operations made by the user. When focussing is carried out manually by the end user, the user can freely select the primary image objects I1 or image object areas FA, to be focussed, from the viewfinder VF. This automatic or manual selection also affects the objects to be blurred. In stage 303, the user can, for example, from the image data ID formed by the sensor 12 for the viewfinder VF, to define at least one or even more image objects I1, on which it is wished to focus the camera means 11, 14. The selection made by the user can include, for example, the lassoing of an area, in which case even irregular objects can be set as primary image objects I1. On the other hand, the primary image object I1 can also be fitted to a predefined area with a rectangular or other shape.

Several different kinds of areas can be predefined in the memory MEM of the device 10.

[0040] In the automatic focussing/image-object selection application, focussing can be concentrated on, for example, one or more image areas (for example, on the centre of the imaging object). The focussing points can also be intelligently selected from the entire image area. One example of this is Canon's Ai-AF system (Artificial intelligence AF).

[0041] In stage 304, by the module 28, more particularly, for example, its sub-module 24, can be determined whether the image object I1 has been focussed properly.

[0042] If it is determined, in stage 304, that the focussing is not correct, the automation 24 calculates new positions for the set of lenses 15. After that, a return is made to stage 301, in which the set of lenses 15 is moved to the new calculated positions. If, however, it is determined in stage 304 that the focussing is correct, the procedure moves to the actual imaging for storing, i.e. to stage 305.

[0043] In stage 305, imaging for storing is performed, when the trigger button of the camera 10 can be pressed all the way down. The image data ID captured using the sensor 12 is taken from the module 13, which performs the AD conversion, to the image-processing chain 27. In the image-processing chain 27, colour interpolation, using module 16, for example, can be performed as stage 306. Other stages will also be obvious to one versed in the art and neither they, nor their order of performance are described here in greater detail.

[0044] Besides specific one or more image objects I1 being able to be focussed in the previous stages 303 and 304 in a manner that is, as such, known, this focussed image area I1, or more particularly its position, size, and/or shape can also be used to blur the undesired image objects and their areas I2, in stage 307. For this purpose; there are code means 31.1 in the program code 31. In stage 303, the focussing point can be used to indicate one or more objects, i.e. in the context of the invention, a primary image object I1 inside the imaging target IT. Around the selected focussing point, for example, the edges and shapes of the image object I1 can be identified, for example, in order to determine the size of the image object I1 and the position of the focussing point. In other words, this refers to the determining of the size of the primary image object I1. This can be carried out by applying the statistical information from stages 303 and 304, more generally produced by the focussing operation 28 obtained from the focussing stage indicated by the broken line. As a result of the operation, the secondary image objects I2 are, of course, also defined, these being defined by the code means 31.5.

[0045] Once the information concerning the position and size of the focussed primary, area I1 of the imaging target IT has been obtained, various filtering operations, for example, can be performed on the image, by means of which the background, i.e. the secondary image objects I2 are blurred, or made less sharp, as desired. The code means 31.2 achieves this operation. The filtering can be of, for example, an evening type, such as spatial low-pass filtering. According to one embodiment, in the invention spatial filtering coefficients, for example, can be calculated using the module 22 (code means 31.3). The filtering coefficients can form, for example, a mask that convolutes the image, which can be used to process the inessential image areas I2.

[0046] The convoluting mask, or in general the filtering coefficients can be defined, for example, from the luminance